

IS THE PUBLIC REALLY INTERESTED IN INVERTEBRATES? WHAT THE QUEENSLAND MUSEUM REFERENCE CENTRE ENQUIRIES FROM 1986-1993 TELL US

GREGORY V. CZECHURA

Czechura, G.V. 1994 06 30: Is the public really interested in invertebrates? What the Queensland Museum Reference Centre enquiries from 1986-1993 tell us. *Memoirs of the Queensland Museum* 36(1): 41-46. Brisbane. ISSN 0079-8835.

Many of the successes of wildlife conservation can be attributed to public interest in, and sympathy for, the animals that are the subjects of such programs. Traditionally, most attention has focused on vertebrates, especially birds and mammals. There is an increasing need to extend public sympathy and interest to invertebrates. An analysis of natural history enquiries received at the Queensland Museum Reference Centre was used to determine present levels of public interest in invertebrates and to understand why people were interested. Vertebrates dominated enquiries but the levels of interest in spiders and insects were similar to those for birds and mammals. Interest in invertebrates was usually highly specific: taxa that were perceived to be dangerous or spectacular in appearance attracted most attention. In conclusion, I summarise the problems for marketing invertebrates and suggest solutions. I stress that there has to be a concerted commitment to the production of readily available information. □ *Museum, education, invertebrates, information, popularity, enquiries, marketing, folk, biodiversity, conservation, Queensland, Australia.*

Gregory V. Czechura, Queensland Museum, PO Box 3300, South Brisbane, Queensland 4101, Australia; 1 September 1993.

Biodiversity has become a major conservation issue and one that is increasingly focusing attention on plant and animal groups that have received little or no attention in the past. Traditionally, these issues have highlighted flagship taxa — especially rare or threatened species — that were usually vertebrates, and mostly birds or mammals. A typical example is the Algerian Nuthatch (*Sitta ledanti*). The discovery in 1975 of this small bird was used to promote a successful campaign for the preservation of the oak-cedar-fir forest remnant of Djebel Babor, Algeria (Diamond et al., 1989).

Even though invertebrates are receiving more attention in conservation, there is still a strong bias towards the higher vertebrates. In part, this is a matter of education. For example, many textbooks describe mammals as the dominant animals on the earth today (e.g. DeBlase & Martin, 1974; also see Plowman, 1994). Further, invertebrates lack the widespread, emotional appeal of vertebrates. For example, the shooting of large numbers of migrating birds over Malta created widespread revulsion and international protest (Fenech, 1992; Taylor, 1992). In contrast, the indiscriminate destruction of large numbers of insects as a consequence of mosquito control programs in the tropics raises little response. In-

deed, such slaughter can be popularly regarded as benign, if not beneficial. If concern about mosquito control is expressed, it is usually about the effects of pesticides on the birds, frogs and fish that share the wetlands with the insects.

Public support is a vital part of successful wildlife conservation and is expressed through political canvassing, financial support, practical assistance, access to private lands and provision of specimens. Given that invertebrates will be receiving greater attention from conservationists, three questions arise about public acceptance of this change in focus.

Firstly, are the public interested in invertebrates and what aspects interest them? Secondly, what strategies are likely to prove to be successful in marketing invertebrates? And finally, is the popularity of vertebrates a problem for marketing invertebrates?

The Reference Centre of the Queensland Museum has maintained records of enquiries from 1986 to the present. These records are examined to seek answers to these questions.

THE REFERENCE CENTRE

The Queensland Museum Reference Centre acts as an interface between the general public

TABLE 1. Reference Centre enquiries: totals for subject areas as represented by the museum's curatorial sections.

Subject	% Total enquiries
Reptiles	28.7
Arachnids	15.1
Insects	10.1
Birds	9.9
Mammals	7.3
General	7.2
Amphibia	6.6
Palaeontology/Geology	4.0
History/Technology	3.3
Fish	1.7
Anthropology/Archaeology	1.7
Molluscs	1.2
Other Invertebrates	1.1
Crustacea	0.8
Preparation	0.7
Maritime Archaeology	0.4
Conservation	0.2

and the museum's curatorial sections. Operation and design philosophy of the centre are based on similar centres operated at the Smithsonian Institution (Madden, 1978), University of Papua New Guinea (Lambley & Frodin, 1987) and the South Australian Museum. The Centre has been in operation since October 1986 when the Queensland Museum moved to its present site in South Brisbane. Scoullar (1989) has reported on broad aspects of the Centre's operations while Czechura (1987, 1993) and Scoullar (1993) have reported information on specific displays and information-gathering projects.

The prime function of the Reference Centre is to screen incoming enquiries and be the interface between the public and the rest of the institution. Enquiries can be made in writing, by telephone or through direct contact. Telephone enquiries are received via the Centre's switchboard or referred from elsewhere in the Queensland Cultural Centre complex. Two permanent members of staff operate the Centre. They are assisted by a receptionist and a varying number of casual staff (Interpretation Officers).

REFERENCE CENTRE ENQUIRIES

A total of 125,314 face-to-face, telephone and written public enquiries were recorded by staff of

the Reference Centre from October 1986 to 30 June 1993. These figures actually under-represent the numbers of enquiries received because, in peak periods with constant demand, there may be not enough time to do the physical act of recording. As an indication of the workload, for the period August 1992 to June 1993, at the telephone switchboard alone, 28,849 telephone enquiries were received. Of these, 17,563 (60.9%) were attended to by staff of the Reference Centre. In addition, the staff responded to enquiries at the counter, letters and direct calls to their telephone extensions. These totals also indicate that the Centre is functioning as an effective screen and interface between the public and other museum staff, thus considerably reducing the latter's workloads and enhancing their productivity.

Tables 1-6 are summaries of the enquiries in terms of Queensland Museum's curatorial sections and by invertebrate groups (Tables 1-6).

DISCUSSION

The first breakdown (Table 1) shows that the Queensland Museum is actively sought by public as an information resource for a variety of topics. The greatest demand is in the area of natural history and enquiries for identification of, and information about, animals account for 82.5% of the total. Within natural history, ver-

Subject	% Total enquiries
General	7.4
Araneomorphs	65.6
<i>Redbacks</i>	28.9
<i>Huntsmen</i>	16.1
<i>Large Orb-weavers</i>	14.8
<i>White-tailed Spider</i>	11.7
<i>Dome-web Spider</i>	6.4
<i>Wolf Spiders</i>	6.0
<i>Black House Spider</i>	3.7
Mygalomorphs	17.0
<i>Funnel-webs</i>	20.1
<i>Tarantulas</i>	18.2
<i>Whistling Spiders</i>	16.9
Centipedes/Millipedes	3.5
Mites/Ticks	3.0
Scorpions	3.5

TABLE 2. Arachnid enquiries: totals for dominant taxa. Italics indicate totals within these groups

TABLE 3. Insect enquiries: totals for dominant taxonomic groups.

Subject	% Total enquiries
General	20.8
Blattodea	1.1
Coleoptera	4.7
Diptera	5.5
Hemiptera	6.6
Hymenoptera	19.9
Isoptera	3.9
Lepidoptera	25.2
Mantodea	1.4

TABLE 4. Crustacean enquiries: totals for dominant taxonomic groups.

Subject	% Total enquiries
General	2.3
Amphipods	12.5
Crabs	35.0
Freshwater Crayfish	20.2
Isopods	30.0

tebrates are the most popular group of animals (54.2% of total) compared to invertebrates (28.3% of total). Nevertheless, two invertebrate groups, spiders and insects respectively, rate as the second and third most popular topics.

It may also be significant that the top seven popular animal groups are terrestrial and characterised by high diversities and densities of species in southern Queensland (Ingram & Raven, 1991), from where most enquiries originate. This suggests people are in close contact with animals and are seeking information on those species that successfully share their increasingly urbanised environment.

For invertebrates, what motivates people to approach the Queensland Museum for information about, or identification of, a specimen in the first place? This question can be answered by examining the data from enquiries for the two dominant, invertebrate, enquiry groups (Tables 2, 3): spiders and insects; and from my personal experience with these enquiries.

For spiders, there appear to be six categories of motives (which can overlap) for contacting the museum for information. First, there is concern about, which may or may not be justified, the presence of dangerous or venomous species in dwellings and workplaces following an en-

counter with a suspect animal. Enquirers are usually worried about being bitten, especially where children are involved. The spiders responsible for the anxiety are usually described by the caller as 'large', 'hairy', 'aggressive', 'black' and other masculine metaphors. Not only do obvious physical features attract people's attention, personal (or shared) interpretations of common names (often wrong) also contribute to apprehension in an encounter (this happens with snake names, too). For example, fear of white-tailed spiders (*Lampona* spp.) results in queries about any spider that has white markings on its abdomen. Overall, the spiders that are commonly responsible for anxious enquirers include: all mygalomorph spiders, huntsman spiders (Heteropodidae), Garden Orb-weaving Spiders (*Eriophora transmarina*), daddy long-legs (Pholcidae) and all species known to be medically significant.

TABLE 5. Mollusc enquiries: totals for dominant ecological and taxonomic groups. Italics indicate totals within these subject areas.

Subject	% Total enquiries
Terrestrial Molluscs	27.1
<i>Red Triangle Slug</i>	4.3
<i>Hedleyella</i> spp.	18.8
Marine Molluscs	39.0
<i>Cones</i>	18.7
<i>Cawries</i>	17.7
<i>Other Gastropods</i>	9.3
<i>Bivalves</i>	2.3
<i>Nudibranchs</i>	4.2
<i>Cephalopods</i>	47.8
<i>Blue-ringed Octopus</i>	64.0

TABLE 6. Reference Centre other invertebrate enquiries: totals for dominant taxonomic groups. Italics indicate totals within these subject areas.

Subject	% Total enquiries
General	4.5
Annelids	18.2
Cnidaria	34.1
<i>box jellyfish</i>	40.0
Echinoderms	9.1
Nematodes	27.3
<i>gordian worms</i>	58.3
Platyhelminths	6.8

The second and third categories of motivation for enquiries also result from personal encounters with live spiders but, here, their enquiries are motivated by curiosity rather than fear. The second is concerned with large spectacular animals, such as Dome-web Spiders (*Cyrtophora moluccensis*), golden orb-weaving spiders (*Nephila* spp.), whistling spiders (*Selenocosmia* spp.) and any spider thought to be a 'tarantula'. The third is concerned with animals that can be deemed unusual in their physical appearance (e.g. triangular spiders (*Arkys* spp.), six-spined spiders (*Gasteracantha* spp.), various flower spiders (Thomisidae) and Two-spined Spiders (*Poecilopachys australasiae*).

The fourth category includes any enquiries stimulated by reading, discussion and school projects. These are typically specific and are not generated through direct contact with animals. These sorts of enquiries often arrive at definite times of the year and in large numbers, especially where schools are involved. The subjects of the enquiries are repetitive and include arachnids such as 'tarantulas', or threatened or dangerous spiders.

The fifth category comprises enquiries generated by responses to stories in the media. The species featured are usually known to be dangerous, or perceived to be so, because they have been treated in a sensational manner by the media — often under the head-line of 'BACKYARD KILLERS' or similar screamers. Most enquiries of this type are superficial and require counselling skills (caring and understanding for a frightened fellow human) more than knowledge of spiders. The spiders involved are usually Redbacks (*Latrodectus hasseltii*) and funnel-web spiders (*Hadronyche* spp.) because they are potentially dangerous and excellent fodder for sensationalist media. Like the previous category, these enquiries do not necessarily involve direct contact with the animals. However, a media report may have motivated a search-and-discovery of suspect animals ('I saw the story on TV and then I found this spider...').

The final category involves people seeking reassurance, either through confirmation or denial, of popular myths (as such, these enquiries resemble the responses arising from sensational media reports). Myths may be recurrent or idiosyncratic. An example of a recurrent myth is the widespread belief that daddy long-legs possess an extremely toxic venom that they are unable to use because their fangs are too short.

Interest in insects is broadly similar to that of

spiders but there are some clear differences. For example, popular myths appear to be much less significant. High species diversity and seasonal patterns of abundance seem to preclude any one species from dominating public attention. The medically significant category is not as important in insects simply because there are no equivalents to funnel-webs or Redbacks, but there is concern about pest species damaging possessions and livelihood. Enquiries involving medically significant insects relate to stinging or biting insects such as assassin bugs, bees, wasps and mosquitoes. Common subjects for pests are termites and those insects — or their larvae — responsible for destroying garden plants.

Curiosity ensures that interest is maintained in large, spectacular species (Giant Wood Moth *Xyleutes cinereus*), unusual and/or bizarre species (e.g. gall-forming eriococcid scale-insects) and species that have spectacular irruptions or migrations (e.g. cutworm moths *Agrotis* spp.; 'granny's cloak moth' *Speiredonia* spp. or *Dasyptodia* spp.; and Caper White Butterflies *Anaphaeis java*). Enquiries about irruptive species can also include concern about the possibility that the insects are pests that could cause damage.

Media-generated interest is also a feature of insect enquiries. For example, the increasing attention being given to feral European wasps (*Vespula* spp.) in southern Australia is presently responsible for a heightened awareness of all species of wasps.

Special interest in insects also exists. Butterflies, cicadas, dragonflies and some groups of beetles have traditionally attracted amateur naturalists (and continue to do so). Enquiries about these four insect groups can be quite similar to those asked about birds: details of natural history or classification are often sought. The identifications required are more technical and can involve difficult-to-identify, superficially similar species or new locality sightings. These enquirers can be very knowledgeable with more than a passing interest in the animals.

CONCLUSION

A general feature of all Reference Centre natural history enquiries is that many of them are repetitively concerned with a relatively narrow core of subjects. With invertebrates, the animals that form this core can be described as mainly medically significant, large or spectacular. Typical examples are: Gordian worms (Nematomor-

pha), Red-triangle Slugs (*Triboniophorus graefei*), Blue-ringed Octopus (*Hapalochlaena* spp.), Redbacks, huntsman spiders and funnel-web spiders. However, there is little public interest in invertebrates outside this core.

What are the implications for biodiversity? Firstly, there needs to be an intense and wider commitment to the provision and management of information about invertebrates. Popular interest has to be encouraged and massaged. The present interest in the core invertebrate groups has to be transformed into a larger interest; the core's popularity has to be made to redound for other invertebrates. At present, such effort are dogged by a lack of available information about the groups that are not popular (Shield & Harrison, 1994). This has to be remedied.

Secondly, it has to be remedied fast. Extinction rates are apparently much higher in invertebrates (e.g. non-marine molluscs; Ponder, 1994) and only popular opinion, which still has to be created, will save them. There has to be a concerted commitment to the production of readily available information.

The following are five immediate issues that require careful consideration in developing invertebrate marketing strategies:

1. Not all taxa will inspire general interest. And how can existing interest in core groups be used to popularize other species.
2. There is an overall lack of available information. A concerted approach is needed using (and in creating) field guides, non-technical references, displays, exhibitions and media articles. There is also a need to target regional or perceptual groups of animals rather than standard taxonomic approaches, e.g. guides to house spiders rather than spiders of Queensland.
3. The lack of common names needs to be addressed.
4. Pejorative images of invertebrates need to be fought, e.g. not all Diptera are disease vectors.
5. In a straitened economy, wider cooperation and sharing of resources will be necessary to meet aims. In this, notable successes have been achieved with exhibitions both locally ('Insects — Friend & Foe', Queensland Museum) and nationally ('Gargantuan from the Garden', Australian Museum) involving many different contributors.

Finally, is there a problem with the continuing, intense popularity of vertebrates in natural history? In museums, there is. Rare resources are used in maintaining curatorial sections for very, small groups of animals — vertebrates — because of their popularity. For example, in the Queensland Museum there are five sections for

vertebrates but only seven for invertebrates, even though invertebrates comprise nearly 95% of the animal kingdom. Compared to invertebrates, the need for taxonomic research in Australian vertebrates is diminishing — in some groups it is not needed at all. Unfortunately attempts to restructure research programs to recognise this reality have often lead to extra-institutional resistance and criticism.

However, the point that is often missed in the resultant debates about restructuring is that 'public interest in vertebrates' and 'research commitment to vertebrates' are two different issues. Public demand for information about, and identification of, vertebrates is an information resource issue. This is the province of reference centres not research centres. Where research programs need to be restructured towards invertebrates, decision-makers should not be apprehensive. They can efficiently — and economically — service public interest in vertebrates by partially reallocating resources to reference centres.

In conclusion, and not least, reference centres in museums and their information services have the potential to greatly assist in popularizing Australia's invertebrate fauna — providing these services are adequately resourced and supported.

ACKNOWLEDGEMENTS

Many people helped with the collation and analysis of the enquiry records since October 1986. Special thanks are extended to Tim Murrell, Elizabeth Drewe, Sybil Monteith, Vicki Sands, Roxanne Fawcett and Rona Gleeson. Discussions and comments on the manuscript were vigorously provided by Rhonda Scoullar, Steve Wilson, Glen Ingram and Jean Tilly.

LITERATURE CITED

- CZECHURA, G.V. 1987. Workshop: Identifying animals. Pp. 54-55. In Czechura, G.V. & Scoullar, R. (eds), 'Conference '87: Museum Education Associations of Australia and New Zealand Biennial Conference 28 September-2 October 1987.' (Queensland Museum, Museum Education Association of Australia: Brisbane).
1993. The Pacific Baza *Aviceda subcristata* in southeastern Queensland: a review of natural history and conservation requirements. Pp. 196-208. In Olsen, P. (ed.), 'Australian raptor studies.' (Australasian Raptor Association, Royal Australasian Ornithologists Union; Mel-

- bourne).
- DEBLASE, A.F. & MARTIN, R.E. 1974. 'A manual of mammology.' (W.C. Brown Company: Dubuque).
- DIAMOND, A.W., SCHREIBER, R.L., PETERSON, R.T. & CRONKITE, W. 1989. 'Save the birds.' (Houghton Mifflin: Boston).
- FENECH, N. 1992. 'Fatal flight — the Maltese obsession with killing birds.' (Quiller: London).
- INGRAM, G.J. & RAVEN, R.J. (eds) 1991. 'An atlas of Queensland's frogs, reptiles, birds & mammals.' (Queensland Museum: Brisbane).
- LAMBLEY, P.W. & FRODIN, D.G. 1987. The Natural Sciences Resource Centre at the University of Papua New Guinea. *Curator* 30(3): 250-258.
- MADDEN, J.C. 1978. Bridge between research and exhibits — The Smithsonian Naturalist Centre. *Curator* 21(2): 159-167.
- PLOWMAN, K. 1994. Stories we tell about fauna. *Memoirs of the Queensland Museum* 36: 185-190.
- PONDER, W.F. 1994. Australian freshwater mollusca: conservation priorities and indicator species. *Memoirs of the Queensland Museum* 36: 191-196.
- SCOULLAR, R. 1989. The Queensland Museum Reference Centre. *Museum Education Association of Australia Journal* 28: 5-8.
1993. 'The Queensland Museum interpretive service: An evaluation.' (Unpublished M.Ed.stud. thesis, University of Queensland, St Lucia).
- SHIELD, J.M. & HARRISON, S. 1994. Invertebrate biodiversity conservation education: Experience with a Bendigo primary school. *Memoirs of the Queensland Museum* 36: 197-201.
- TAYLOR, K. 1992. The killing sites of Malta. *BBC Wildlife* 10(6): 69-70.